

Low Cost Upper Stage for Affordable Nano/Micro Launch, Phase I

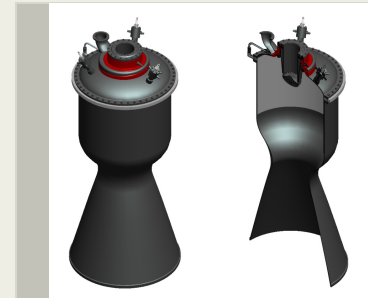
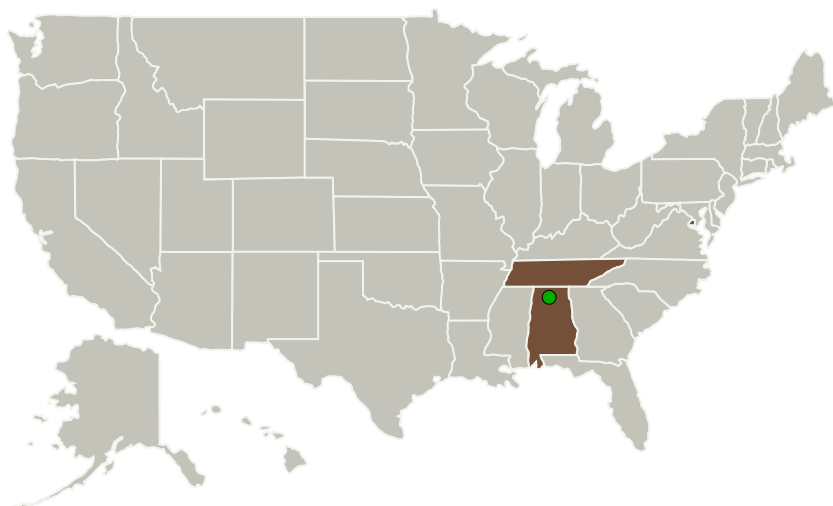
Completed Technology Project (2016 - 2017)



Project Introduction

TGV Rockets, Inc., in partnership with the University of Tennessee, Knoxville, proposes to develop a unique Low-Cost Upper Stage for Affordable Nano/Micro Launch. The stage will make use of a novel eutectic fuel blend that is thermally compatible with liquid-oxygen, unique low-cost lightweight avionics, and simple common-wall tanks. The projected production cost of the completed upper stage is approximately \$100,000. TGV will build upon this technology to produce the system capability to launch 100 Lbs. to LEO for \$1 Million.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
TGV Rockets, Inc.	Lead Organization	Industry Small Disadvantaged Business (SDB)	Washington, District of Columbia
● Marshall Space Flight Center(MSFC)	Supporting Organization	NASA Center	Huntsville, Alabama
The University of Tennessee-Knoxville(UT-K)	Supporting Organization	Academia	Knoxville, Tennessee

Primary U.S. Work Locations

Alabama	District of Columbia
Tennessee	

Project Transitions

▶ **July 2016:** Project Start

✓ **June 2017:** Closed out

Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/139852>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

TGV Rockets, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

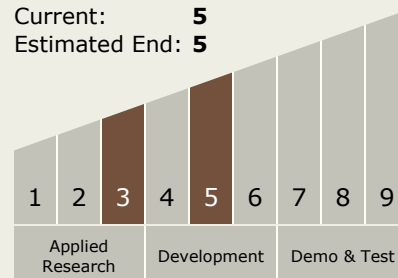
Carlos Torrez

Principal Investigator:

Earl W Renaud

Technology Maturity (TRL)

Start: 3
Current: 5
Estimated End: 5

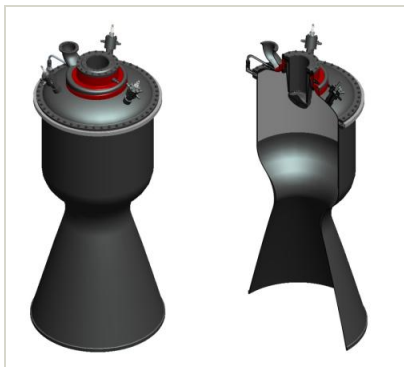


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Images



Briefing Chart Image

Low Cost Upper Stage for
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(<https://techport.nasa.gov/image/132453>)



Final Summary Chart Image

Low Cost Upper Stage for
Affordable Nano/Micro Launch,
Phase I Project Image

(<https://techport.nasa.gov/image/129517>)

Technology Areas

Primary:

- TX01 Propulsion Systems
 - └ TX01.1 Chemical Space Propulsion
 - └ TX01.1.1 Integrated Systems and Ancillary Technologies

Target Destinations

The Moon, Mars, Outside the
Solar System, The Sun, Earth,
Others Inside the Solar System